

CLAIMS:

Sub A1

1. A miter saw comprising:

a support structure having a cutting zone;

5 a blade supported by the support structure so that the blade may move into the cutting zone;

a motor adapted to drive the blade;

a detection system to detect contact between a person and the blade; and

a reaction system adapted to create an impulse against movement of the blade into the cutting zone upon detection by the detection system of contact between the person and the blade.

2. The miter saw of claim 1, where the reaction system is adapted to move the blade in a direction away from the cutting zone upon detection by the detection system of contact between the person and the blade.

3. The miter saw of claim 1, where the blade is rotatable, and where the reaction system is further adapted to stop rotation of the blade upon detection by the detection system of contact between the person and the blade.

4. The miter saw of claim 3, where the reaction system includes a brake mechanism adapted to engage and stop the rotation of the blade, and where the engagement of the brake mechanism with the blade creates the impulse against movement of the blade into the cutting zone.

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5. The miter saw of claim 4, where the engagement of the brake mechanism with the blade moves the blade in a direction away from the cutting zone.

6. The miter saw of claim 4, where the blade has angular momentum when rotating, and where the engagement of the brake mechanism with the blade creates the impulse due, at least partially, to the angular momentum of the blade.

7. The miter saw of claim 3, where the reaction system includes a brake mechanism adapted to engage and stop the rotation of the blade, and where the brake mechanism is coupled to the support structure to maintain an operative position relative to the blade as the blade moves into the cutting zone.

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8. The miter saw of claim 3, where the reaction system includes a first mechanism adapted to stop the rotation of the blade, and a second mechanism adapted to create an impulse against movement of the blade into the cutting zone.

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9. A miter saw comprising:  
a support structure having a cutting zone;  
a rotatable blade supported by the support structure so that the blade may move  
into the cutting zone;  
5 a motor adapted to drive the blade;  
a detection system adapted to detect contact between the blade and a person; and  
a brake mechanism adapted to stop rotation of the blade upon detection by the  
detection system of contact between the blade and the person.

10. The miter saw of claim 9, where the brake mechanism is further adapted to  
stop movement of the blade into the cutting zone.

11. The miter saw of claim 9, where the support structure includes a pivot arm  
adapted to support the blade and selectively pivotal toward and away from the cutting  
zone, and where the brake mechanism is further adapted to move the pivot arm away  
from the cutting zone.

12. The miter saw of claim 9, where the support structure includes a pivot arm adapted to support the blade and selectively pivotal toward and away from the cutting zone, where the brake mechanism is adapted to engage the blade upon detection by the detection system of contact between the blade and the person, and where engagement of the brake mechanism with the blade causes the pivot arm to pivot away from the cutting zone.

13. The miter saw of claim 12, where the blade has angular momentum when rotating, and where the engagement of the brake mechanism with the blade causes the pivot arm to pivot away from the cutting zone, due at least partially, to the angular momentum of the blade.

14. The miter saw of claim 9, where the support structure includes a pivot arm adapted to support the blade and selectively pivotal toward and away from the cutting zone, and further comprising a second brake mechanism adapted to stop the pivot arm from pivoting toward the cutting zone upon detection by the detection system of contact between the blade and the person.

15. The miter saw of claim 9, where the support structure includes a pivot arm adapted to support the blade and selectively pivotal toward and away from the cutting zone, and further comprising a second brake mechanism adapted to move the pivot arm away from the cutting zone upon detection by the detection system of contact between  
5 the blade and the person.

16. The miter saw of claim 9, where the blade has teeth, and where the brake mechanism includes at least one brake pawl adapted to pivot into the teeth of the blade.

17. A miter saw comprising:  
a base having a cutting region;  
a blade;  
15 a brake system adapted to brake the blade; and  
a linkage between the blade and base, where the linkage is configured to cause the blade to move away from the cutting region when the brake system brakes the blade.

18. The miter saw of claim 17 where the blade is rotatable, where the blade has an angular momentum when rotated, and where the linkage is configured so that the angular momentum of the blade causes the blade to move away from the cutting region when the brake system brakes the blade.

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19. A miter saw comprising:

a base;

a housing pivotally connected to the base;

a blade;

a mounting system holding the blade in the housing; and

a brake system adapted to brake the blade;

where the mounting system is configured so that the blade pivots into the housing when the brake system brakes the blade.

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20. A miter saw comprising:  
a base;  
a swing arm supported by the base and adapted to move toward a workpiece to be cut;  
5 a blade mounted to move with the swing arm to contact the workpiece when the swing arm moves toward the workpiece;  
a detection system adapted to detect a dangerous condition between a person and the blade; and  
a reaction system adapted to interrupt the movement of the blade and swing arm upon the detection by the detection system of the dangerous condition between the person and the blade.

21. The miter saw of claim 20, further comprising a piston/cylinder to limit the speed with which the swing arm can move.

22. The miter saw of claim 20, where the swing arm includes a cam portion, and further comprising a pawl adapted to engage the cam portion to stop the movement of the swing arm toward the workpiece upon the detection of the dangerous condition.



23. A miter saw comprising:

a base;

a blade supported by the base;

a detection system adapted to detect a dangerous condition between a person and

5 the blade; and

a reaction system associated with the detection system to cause a predetermined  
action to take place upon detection of the dangerous condition.

24. The miter saw of claim 23, where the reaction system includes a brake  
system to brake the blade.

25. The miter saw of claim 23, where the reaction system includes a  
15 mechanism to retract the blade.

26. A miter saw comprising:

a base;

a blade supported by the base;

a detection system adapted to detect a dangerous condition between a person and

5 the blade; and

reaction means associated with the detection system for causing a predetermined action to take place upon detection of the dangerous condition.

27. The miter saw of claim 26, where the blade is rotatable, and where the predetermined action is to stop the blade from rotating.

28. The miter saw of claim 26, where the base has a cutting zone, where the  
15 blade is adapted to move into the cutting zone to cut a workpiece, and where the predetermined action is to create an impulse against movement of the blade into the cutting zone.

29. The miter saw of claim 26, where the base has a cutting zone, where the  
20 blade is adapted to move into the cutting zone to cut a workpiece, and where the predetermined action is to cause the blade to move away from the cutting zone.